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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,257	03/19/2001	Lowell E. Kolb	10001844-1	2624

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

DINH, TUAN T

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/813,257

Applicant(s)

KOLB ET AL.

Examiner

Tuan T Dinh

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1, and 3-17 have been considered but are not persuasive.

Applicant argues.

(a) McCullough does not teach "first coating layer 14 so as bridge across and infill a circuit board cavity to render the cavity substantially inaccessible"

(b) McCullough teaches a first coating layer 14 with gaps and openings to the PCB cannot render the coated portion of the PCB.

(c) McCullough does not teach a second coating 16 to "bridge across one or more openings of cavities on the PCB so as to render the cavity substantially inaccessible to subsequently-applied coating"

Examiner disagrees.

Response to arguments (a) and (c), McCullough shows in figure 1, that a PCB (12) having electronic components (22), coating layers (14, 16) being deposited on almost, and preferably all of the PCB surfaces (20), column 3, lines 8-10, so as bridge across and infill a circuit board cavity (a space between and beneath leads of the components 22) to render (melt) the cavity substantially inaccessible.

Response to argument (b), McCullough's reference shown in figure 1 teaches the coating layers (14, 16) facilitated render the coated portion to the PCB.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 3-17 are rejected under 35 U.S.C. 102(e) as being anticipated by McCullough et al. (U. S. Patent 6,127,038).

As to claim 1, McCullough discloses a printed circuit board (PCB, 12-figure 1, column 2, line 37) comprising:

a printed wiring board (12);

a plurality of components (22, column 3, line 1) mounted on said PWB, wherein the PCB has a cavity with one or more openings (underneath of component 22) to the surface of the PCB; and

an electrically non-conductive filler material (14, column 3, lines 8, 52-64) disposed in the cavity and on the surface of the PCB immediately surrounding the cavity so as bridge across and to at least partially infill the one or more openings of the cavity, wherein the filler material renders the cavity substantially inaccessible to subsequently-applied coatings (16, column 3, line 15).

As to claims 12, and 15-16, McCullough discloses a printed circuit board (PCB, 12-figure 1, column 2, line 37) comprising:

a printed wiring board (12);

a plurality of components (22, column 3, line 1) having a device body mounted on said PWB to form one or more regions of the PCB having a high variable and cavitationous surface including a plurality of cavities defined by component leads, wherein the PCB has a cavity with one or more openings (underneath of component 22) to the surface of the PCB; and

a layer of non-electrically-conductive filler material (14, column 3, lines 8, 52-64) conformingly adhered to the PCB surface in the one or more regions to provide a contoured, contiguous filler material surface having gradual transition, wherein the filler material bridge across the cavity openings and at least partially infill the cavity, wherein the PCB further comprises a low viscosity dielectric coating (16) so that the filler material prevent the dielectric coating from entering the plurality of cavities.

As to claim 3, McCullough discloses the PCB (12) wherein the cavity comprises a volume of space define by leads (24, column 3, line 2) of the components (22), the component body and the PWB, wherein the volume of space has a plurality of openings to the surface of the PCB between neighboring component leads.

As to claims 4-5, McCullough discloses the PCB wherein the cavity comprises a volume of space between neighboring components mounted on the PCB.

As to claims 7 and 14, McCullough discloses the PCB wherein said filler material is an epoxy (column 3, line 34).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6, 8-11, 13-14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCullough et al. (U. S. Patent 6,127,038).

As to claim 6, 8-10, 13-14, and 17, McCullough does not disclose the filler material is thixotropic epoxy, wherein the epoxy is one of the family of Bisphenol-A epoxies mixed with an amine hardener, wherein the epoxy is a thermal cured epoxy, latex based non-electrically conductive epoxy. However, McCullough does teach to use the epoxy family and a mixed with amine hardener, it is well known in the art to use thixotropic epoxy as Bisphenol-A filler material. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the filler material as the thixotropic epoxy, wherein the epoxy is one of the family of Bisphenol-A epoxies mixed with an amine hardener, wherein the epoxy is a thermal cured epoxy, latex based non-electrically conductive epoxy for purpose of reducing heat and against EMI from components mounted on the PCB, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

As to claim 11, McCullough discloses the PCB wherein the subsequently-applied coating (16) comprises a layer of dielectric coating that conformingly coats exposed

surfaces of the PCB including the filler material (14), the dielectric coating formed of a low viscosity material (column 3, lines 65-66) that facilitates accurate application of the dielectric coating, wherein the at least one or more cavity openings is sufficiently large to prevent the dielectric coating from bridging across the cavity openings without the presence of the filler material.

The limitation "the dielectric coating using a spray atomized technique" has been consider. However, the presence of process limitation in product claims, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to that product. In re Stephens 145 USPQ 656 (CCPA 1965).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-1341 for regular communications and 703-305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

TD
March 04, 2003.